

WE CLAIM:

1           1.    A fuel injection valve for an injection system  
2   for an internal combustion engine, said valve comprising:  
3           a valve body having a valve body seat, and  
4           a valve needle having a valve needle seat guided  
5   over a guide length (L) in the valve body within a  
6   stationary circular guiding surface for controlling a  
7   spray orifice , wherein the valve body includes a  
8   reservoir in the shape of an annular groove, said  
9   reservoir arranged coaxially to the guiding surface.

1           2.    A valve in accordance with Claim 1, wherein the  
2   reservoir is separated from the guiding surface of the  
3   valve body by a cylinder-shaped wall section.

1           3.    A valve in accordance with Claim 1, wherein the  
2   reservoir has a depth (T) of at least one fifth of the  
3   guide length (L) .

1           4.    A valve in accordance with Claim 1, further  
2   comprising a hydraulic connection between a fuel inlet of  
3   a pressure chamber in the valve body and the reservoir.

1           5.    A valve in accordance with Claim 1, wherein the  
2   reservoir has a thickness ( $D_N$ ) of at least one fifth of  
3   the diameter of the guiding surface.

1           6.    A valve in accordance with Claim 2, wherein  
2   the wall section has a thickness ( $D_W$ ), the reservoir has a  
3   thickness ( $D_N$ ), and ( $D_W$ ) and ( $D_N$ ) are approximately equal.

1           7.    A valve in accordance with Claim 2, wherein the  
2   wall section is hollow.

1           8. A valve in accordance with Claim 1, wherein the  
2 fuel injection system is a high-pressure accumulator  
3 injection system.

1           9. A valve in accordance with Claim 1, wherein the  
2 reservoir is a high pressure reservoir.

1           10. A valve in accordance with Claim 4, wherein the  
2 connection is adapted to maintain pressure in the  
3 reservoir.

1           11. A valve in accordance with Claim 1, wherein the  
2 reservoir has a depth (T) of up to about half the guide  
3 length (L).

1           12. A valve in accordance with Claim 7, wherein the  
2 wall section elastically deforms under pressure.

1           13. A valve in accordance with Claim 1, wherein the  
2 diameter of the valve needle guide is about 3 mm to about  
3 4 mm.

1           14. A valve in accordance with Claim 6, wherein the  
2 thickness ( $D_w$ ) is approximately 1 mm.

1           15. A valve in accordance with Claim 6, wherein the  
2 thickness of the reservoir is approximately 1 mm.

1           16. A valve in accordance with Claim 1, wherein the  
2 reservoir has a depth (T) of about 5 mm.